Control Number: 51812

Item Number: 174

Addendum StartPage: 0

PROJECT NO. 51812

ISSUES RELATED TO THE STATE OF DISASTER FOR THE FEBRUARY 2021 WINTER WEATHER EVENT	§ § §	PUBLIC UTILITY COMMISSION OF TEXAS

Texas Weather Event of the Week of Sunday, February 14, 2021
Electric Industry: Lessons Learned and Immediate Remedies

The competitive wholesale electricity markets administered by the Electric Reliability Council of Texas (ERCOT or Independent System Operator (ISO)) experienced significant operational and market related problems during the severe weather storm event that began on Sunday, February 14, 2021 and lasted for several days. The weather storm resulted in problems ranging from major power outages and blackouts to significant price spikes for various energy and ancillary services. The event has already caused a major bankruptcy and many more Companies, Cooperatives, and Municipalities may face similar financial hardship. In addition, a small portion of Residential Customers, who were on variable rates, are facing outrageous monthly electric bills.

Texas Legislative Session as well as Regulatory Agencies, dealing with both power and natural gas industries, are working to fully understand the scope and magnitude of the problems, identify the main causes, and develop appropriate remedies to address those problems.

The purpose of this writing is to identify the main few areas for immediate actions. In particular, the following three areas are addressed in this short writing:

1. Market Prices
2. System Reliability
3. Customers Protection

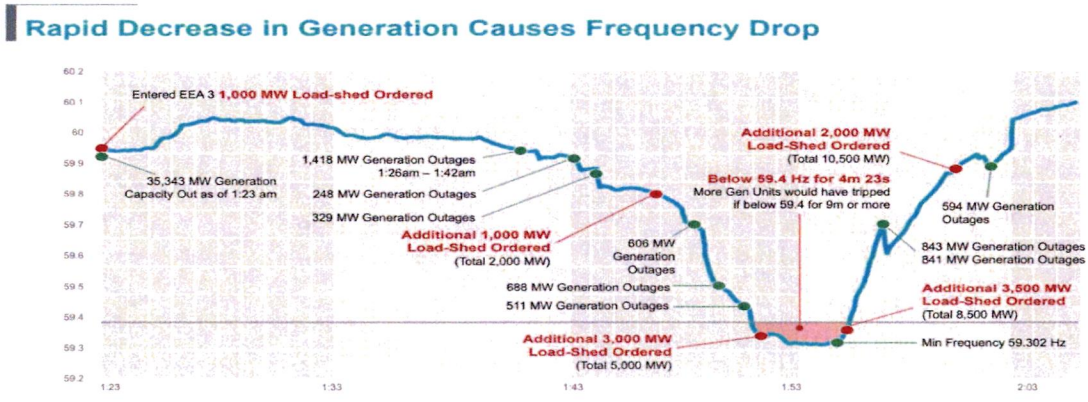
I. Market Prices

Due to the severe weather event, market experienced skyrocketing prices, based on Locational Marginal Prices (LMPs), that reached to the system wide offer cap of $9,000 per Megawatt-hour (MWH) (for energy) or Megawatt (MW) (for ancillary services). The ERCOT market design allows prices to increase to the system wide offer cap as operating reserves decline in the system reflecting economic scarcity conditions. Given such conditions in the market, high prices persisted for several days, finally ending on Friday, February 19, 2021.

It is ideal for the ERCOT power system to operate with frequency around 60 HZ. In balancing supply and demand for electric power, the system operator has to take necessary actions to

maintain system frequency within desired range of 60 HZ +/- 0.036, or between 59.964 HZ and 60.036 HZ. From the system operator's view, the system frequency was moving in the wrong direction due to decrease in the level of operating reserves that would justify fast increase in prices to reach to the system wide offer cap as allowed by the current market design in ERCOT.

The following graph shows the changes in ERCOT system frequency between 1:23 am and 2:03 am in the early morning of February 15, 2021. It also reflects loss of some generating power plants and responding actions taken by ERCOT shedding load to balance the system.



Source: Texas' Power Grid Was 4 Minutes And 37 Seconds Away From Collapsing. Here's How It Happened. | KUT Radio, Austin's NPR Station, by **Matt Largey**, February 24, 2021.

It is well-understood that real economic scarcity will result in higher prices in most of the markets. The main concern for policy makers should be to find ways to deal with abnormal prices that are not the result of real economic scarcity conditions within the markets administered by the Electric Reliability Council of Texas (ERCOT). In Author's view, the real scarcity condition ceased to exist when ERCOT system frequency dropped below 59.4 HZ.

Solution:

- **Introduction**: The ERCOT Protocols require the Independent System Operator (ISO) to run its Security Constraint Economic Dispatch (SCED) to generate LMPs every few minutes. In order to reflect economic scarcity conditions, the LMPs are adjusted upward to reflect declines in operating reserves. This LMP adjustment is based on a well-defined Operating Reserve Demand Curve (ORDC) mechanism.

  At the same time, the ISO has to take necessary actions to maintain system frequency within desired range of 60 HZ +/- 0.036, or between 59.964 HZ and 60.036 HZ. However, due to system conditions, the system frequency may drop to a level outside of the desired range. Load shedding is among the tools available to the ISO to manage system frequency. The ISO issues various Energy Emergency Alerts (EEAs) to get help from additional resources and/or request load reductions to address drop in system frequency. However,

it is not acceptable for the ISO to allow system frequency to drop below 59.4 HZ that may result in significant damages to the electrical system.

- **Proposal**: A mechanism should be established to replace the market generated LMPs by Regulated Prices under certain conditions (RPs Mechanism). These Regulated Prices should be approved by the Public Utility Commission of Texas (PUCT). The following three-step mechanism is recommended:
    1. RPs Mechanism begins when the system frequency drops below 59.4 HZ.
    2. RPs Mechanism remains in place as long as load shedding is in progress.
    3. RPs Mechanism ends and the market generated LMPs begin when system frequency is stabilized reaching to the desired range (60 HZ +/- 0.036) with no further need for system operator to interfere with the operation.

II. System Reliability

The ERCOT competitive wholesale electricity market has always operated to obtain the best economic outcomes while maintaining desired level of reliability. While the Public Utility Commission of Texas has an oversight authority over the market and its reliability concerns, the Federal Energy Regulatory Commission (FERC), through the North America Electric Reliability Corporation (NERC), also oversees reliability issues for ERCOT Region. This federal oversight is practiced through the Texas Reliability Entity (TRE). Therefore, when it comes to reliability concerns, it is crucial for both PUCT and TRE to fully cooperate and coordinate their actions to protect public interest. Various articles in local and national media have indicated that ERCOT region could be able to handle the February 2021 event if reliability recommendations by FERC, that have been issued since the Texas weather storm in 1989, would be implemented in a timely manner.

Solution:

- **Introduction**: The current ERCOT electricity market governance, which is heavily relied upon stakeholder process, could not adequately prepare ERCOT market to handle reliability concerns that were experienced during the February 2021 weather event. While ERCOT has Reliability and Operations Subcommittee (ROS), the structure and effectiveness of such Subcommittee is heavily influenced by the stakeholder process. It is not surprising to notice that some stakeholders have no intention of improving the reliability or operations of the ERCOT grid but to minimize their companies' costs exposure to compliance. The best examples are recommendations after weather events in 2011 and 2014 by federal authorities to weatherize Texas power plant and natural gas pipeline. As mentioned earlier, such recommendations have been heard and no adequate actions have been taken since 1989.

- **Proposal**: There is a need to change the status quo when it comes to reliability concerns. Reliability is not something that could be fully left to the stakeholder process. The following recommendations worth consideration:

    1. **PUCT**: The Commission has to take more active role to set minimum reliability parameters and expect full compliance by ERCOT and all market participants.

    2. **ROS**: ERCOT has the most experienced and knowledgeable Staff in various important areas including operations and reliability concerns. Their operational and reliability recommendations should be taken very seriously by the ROS rather than dying in stakeholder process. ROS has to give the highest priority to and consider ERCOT recommendations with regard to operations and reliability concerns and develop adequate remedies.

    3. **ERCOT**: ERCOT should be given the authority by PUCT to bypass the stakeholder process and directly communicate with the PUCT if responses by ROS regarding operations and reliability concerns do not satisfy ERCOT.

III. Customer Protection

The ERCOT retail competitive electricity market is considered the best in the United States and among the top ones in the world. Majority of customers are provided variety of options ranging from prices, time of use, or sources of energy such as green power. These customers can shop around and select their Retail Electric Providers (REPs) as they desire so. The Public Utility Commission of Texas has adopted several substantive rules to provide adequate protection to customers and prevent them from unintended consequences. That said, ERCOT competitive electricity market has areas that could be identified for improvements. Unexpected high monthly bills have surfaced during the current weather storm within ERCOT competitive electricity market.

Solution:

- **Introduction**: The February 2021 weather storm highlighted one of the areas for improvement, mainly, the availability of variable prices to Residential Customers. These variable rates are based on prices in ERCOT competitive wholesale electricity market in which a typical price of less than 6 cents per KWH can jump to $9.00 per KWH under scarcity conditions. Local and national media have reported cases in which such customers saw sudden increases in their monthly bills rising from a typical monthly bill of $150 to outrageous monthly bill of $16,500.

- **Proposal**: Variable rates are excellent options for Commercial and Industrial Customers due to the fact that such customers are well aware of potential market risk and can effectively manage such risks under scarcity conditions. In contrast, Residential

Customers are typically ill equipped to manage such risks and fall victims when scarcity prices are in effect in competitive wholesale electricity market. The following recommendation is made for consideration:

- **PUCT:** The Commission should prohibit REPs from offering variable rates to Residential Customers. At minimum, a maximum cap should be established for prices charged to these customers during real scarcity conditions that could be up to 10 to 20 times of a typical rate.